

Beeturia Mimicking Painless Hematuria

Zackariah Clement^{a, c}, Meeghan Ashford^b

Abstract

Excretion of red to brown urine is observed in a variety of clinical settings. Beeturia is defined as red to brown discolouration of urine after consumption of beets. The reddish colouration of the urine is due to the excretion of the reddish pigment betalaine (betanin). It is commonly seen in individuals with abnormalities in iron metabolism. Beeturia can also cause unnecessary anxiety among patients, their families and can lead to expensive investigations. We report a 43 years old woman who presented with suspicious painless hematuria and melaena after ingestion of beets.

Keywords: Beeturia; Beets; Betalaine; Painless hematuria

Introduction

Normal urine is clear and light yellow in colour, but it may

also have a variety of other colours [1]. Excretion of red to brown urine is observed in a many benign clinical settings [1, 2]. The little studied condition of Beeturia refers to the presence of red urine after the ingestion of beets [3]. While this condition is considered benign, it may be associated with abnormalities in iron metabolism. Although the phenomenon of beeturia is known, it is not well publicised in the scientific literature. We report a case of beeturia mimicking painless hematuria.

Case Report

A 43 years old female with a history of chronic back pain was referred by a General Practitioner (GP) with a 2 day history of painless hematuria and melaena. She was not on any regular prescription or over-the-counter medications. She did not complain of any urinary or bowel symptoms and there was no change in bowel habits. She has a family history of colorectal carcinoma.

On presentation she was anxious and diaphoretic. Vital signs showed sinus tachycardia with a pulse rate of 106 beats per minute, other vital signs were within normal limits. Physical examination was unremarkable. Digital rectal examination did not show melaena, blood, hemorrhoids, fissures or mass.

Blood tests including full blood count, renal function, liver function, C - reactive protein, and iron studies were within normal laboratory reference range. Urinalysis showed leucocytes and squamous epithelial cells measuring less than $10 \times 10^6/L$ which is considered within normal range, but no erythrocytes seen. Faecal specimen did not show any erythrocytes and immunofluorescent stain was negative. CT abdomen and pelvis were performed which did not demonstrate any urological or gastrointestinal pathology.

After revisiting the history, the patient revealed consumption of beetroot one day prior to the commencement of red coloured urine and dark faeces. The cause of the discolouration of urine and faeces were diagnosed as beeturia. The patient and her family were given an explanation in regards to beeturia, which alleviated their anxieties, the patient was then discharged home.

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^aDepartment of Surgery, The Canberra Hospital, Australia

^bDepartment of Nursing and Midwifery, The Canberra Hospital, Australia

^cCorresponding author: Zackariah Clement, Department of Surgery, The Canberra Hospital, 60 Boddington Crescent, Kambah, Canberra, Australia. Email: zackariahc@yahoo.com

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Discussion

The intermittent excretion of red to brown urine is observed in a variety of clinical settings [2]. The initial approach in the assessment of this problem is to see if the red colour is in the urine sediment or the supernatant. Apart from urine dipstick analysis, the specimen must be sent to the laboratory for microscopy, culture and sensitivity. If it is the supernatant that is red, then the supernatant should be tested for heme and a red supernatant that is negative for heme is a rare finding that can be seen in several conditions. These include the use of bladder analgesics, food dyes, the ingestion of beets in susceptible subjects, and porphyria. A red supernatant that is positive for heme is usually due to myoglobinuria or hemoglobinuria. False positive heme reactions may be seen if seminal fluid is present in the urine, alkaline urine (pH > 9), or contaminated with oxidising agents used to clean the perineum during catheterisation [4, 5].

Beeturia is defined as red, pink or even brown discoloration of urine after consumption of beets. It occurs in approximately 10 to 14 percent of the population [3]. The reddish discoloration of the urine is due to the excretion of the reddish pigment betalaine (betanin). Beeturia in normal population has been variously ascribed to genetic factors, food allergy, gastric acidity, gastric emptying, and colonic oxalic acid [2, 3, 5-7]. Betalaine in beet is a redox indicator and it is protected by reducing agents, such as oxalate, and decolourised by ferric ions, hydrochloric acid, and colonic bacteria [5]. Hence, beeturia is more likely to occur in the following settings [3, 5, 6]: 1) Iron deficiency anaemia which, if corrected, eliminates the beeturia; 2) Achlorhydria due to pernicious anaemia; 3) Concurrent ingestion of oxalate-containing foods (spinach, rhubarb, oysters) which can induce beeturia in subjects without previous beeturia.

Although the phenomenon of beeturia is not considered harmful, it may be a possible indicator to investigate the patient's iron metabolism. Individuals with iron deficiency and/or excess (hemochromatosis), or specific problems with iron metabolism are much more likely to experience beeturia [3, 6]. Besides causing red to brown discoloration of the urine, betalaine in beets is a phytonutrient, which have been shown to provide antioxidant, anti-inflammatory properties and should be encouraged to be consumed as part of a healthy diet [8]. Beeturia can cause unnecessary anxiety among patients and their families and can lead to expensive investigations. Therefore it is important for the clinicians and GP's to think about beeturia as a differential diagnosis in patients presenting with possible painless hematuria and melena.

Conflict of Interest

The author(s) declare that they have no competing interests.

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Consent

The authors declare that: 1) Informed consent was obtained from the patient for the publication of the details relating to the patient in this report. 2) There are no patient identifiable details in this report. All possible steps have been taken to safeguard the identity of the patient. 3) This submission is compliant with the requirements of local research ethics committee.

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